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[Continued on next page]

(54) Title: INSECTICIDAL PROTEINS SECRETED FROM BACILLUS THURINGIENSIS AND USES THEREFOR

|     | 10                                                                                | 20  | 30  | 40  |           |
|-----|-----------------------------------------------------------------------------------|-----|-----|-----|-----------|
| 1   | M K N R F S K V A L C T V P I L M V S T P A S S S M S A F A A E A K S S P D L N V |     |     |     | TIC901p   |
| 1   | M K Y K S S K V A I C T L P A L M L S T T P V T P S M S T F A A E T K S P N L N A |     |     |     | TIC1201p  |
| 1   | M K Y K S S K V A M C T L S A L M L S T I A T P S I S V F A A E T T L F G Q T L   |     |     |     | TIC407p   |
| 1   | M K Y K S S K V A M C T L S A L M L S T I A T P S I S V F A A E T T A S H K V T   |     |     |     | TIC417p   |
|     | M K Y K S S K V A X C T L S A L M L S T I A T P S M S V F A A E T T S P K L N X   |     |     |     | TIC431p   |
|     |                                                                                   |     |     |     | Consensus |
|     | 50                                                                                | 60  | 70  | 80  |           |
| 41  | S Q Q V I G P Y A B S Y I D I V Q D R M K Q R D R K S K L T G K P I N M Q E Q A   |     |     |     | TIC901p   |
| 41  | S Q Q A I T P Y A B S Y I D I V Q D R M K Q R D R K S K L T G K P I N M Q E Q A   |     |     |     | TIC1201p  |
| 41  | K E Q S I T P R A B S Y I D I V H N R M K Q R D I E S K R T G K P I N M Q E Q A   |     |     |     | TIC407p   |
| 41  | N Q Q T I T Q R A B S Y I D I V H N R M K K R D I E S K M T G K P I N M Q E Q A   |     |     |     | TIC417p   |
| 41  | S Q Q X I T P R A B S Y I D I V Q D R M K Q R D I E S K L T O K P I N M Q E Q A   |     |     |     | TIC431p   |
|     |                                                                                   |     |     |     | Consensus |
|     | 90                                                                                | 100 | 110 | 120 |           |
| 81  | I D G W F L A R F W I F K D Q N N N H Q T N R F I S W P K D N I A S S K G Y N S   |     |     |     | TIC901    |
| 81  | I D G W F L A R F W I F K D Q N N N H Q T N R F I S W P K D N I A S S K G Y N S   |     |     |     | TIC1201   |
| 81  | I D G W F L A R F W I F K D Q N N N H Q T N R F I S W P K D N I A S S K G Y N S   |     |     |     | TIC407    |
| 81  | I D G W F L A R F W I F K D Q N N N H Q T N R F I S W P K D N I A S S K G Y N S   |     |     |     | TIC417    |
| 81  | I D G W F L A R F W I F K D Q N N N H Q T N R F I S W P K D N I A S S K G Y N S   |     |     |     | TIC431p   |
|     |                                                                                   |     |     |     | Consensus |
|     | 130                                                                               | 140 | 150 | 160 |           |
| 121 | I A E Q M G L K I E A R N D M D V T N I D V T S K T G D T I Y N G V S E L K N Y   |     |     |     | TIC901    |
| 121 | I A R Q M G L K I E A L N D M D V T N I D V T S K T G D T I Y N G V S E L K N Y   |     |     |     | TIC1201   |
| 121 | I A E Q M G L K I E S M S D M N V S N I N Y T G K K G D T I Y N G V S E L K N Y   |     |     |     | TIC407    |
| 121 | I A E Q M G L K I E A L N D M D V S N I N Y T S K T G D T I Y N G V S E L K N Y   |     |     |     | TIC417    |
| 121 | I A E Q M G L K I E A L N D M D V S N I N Y T S K T G D T I Y N G V S E L K N Y   |     |     |     | TIC431p   |
|     |                                                                                   |     |     |     | Consensus |

(57) Abstract: The present invention relates to the isolation and characterization of nucleotide sequences encoding novel insecticidal proteins secreted into the extracellular space from *Bacillus thuringiensis* and related strains. The proteins are isolated from culture supernatants of *Bacillus thuringiensis* and related strains and display insecticidal activity against coleopteran insects including Colorado potato beetle (*Lymantria dispar*) and Southern Corn Rootworm (*Diabrotica undecimpunctata*). Insecticidal proteins encoded by nucleotide sequences that hybridize to the isolated and characterized nucleotide sequences are disclosed. Also disclosed are methods of making and using transgenic cells and plants comprising the novel nucleotide sequence of the invention.



European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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